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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,606	04/19/2001	Timothy M. Schmidl	TI-31457	3520
23494	7590	02/22/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265				KIM, KEVIN
ART UNIT		PAPER NUMBER		
				2638

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/838,606	SCHMIDL ET AL.	
	Examiner	Art Unit	
	Kevin Y. Kim	2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 14 December 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5,8-21,23-29 and 31 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-5,8-21 and 23-29 is/are rejected.
 7) Claim(s) 31 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim 22 (now cancelled and included in claim 21) have been considered but are moot in view of the new ground(s) of rejection. Patentability determination in connection with original claim 22 was inadvertently left out in the previous Office action. The rejection of the claimed subject matter is set forth below in view of a prior art reference.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is directed to reducing the number of RF channels used in a frequency hopping system and yet requires a substitution of an RF channel with a previous one. Since the substitution of a channel does not reduce the number of channels, the preamble of the claim and the body of the claim are inconsistent, creating confusion. For the examination purposes, the claim is understood as drawn to substituting interfered RF channels.

The subject matter of Claim 20 is already present in claim 16. Thus, Claim 20 fails to further limit its base claim.

Claim Rejections - 35 USC § 102

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 8, 10, 12-14, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Koivu (US 5,737,359).

Claims 1, 21.

Koivu discloses a method of reducing the number of RF channels (i.e., substituting of RF channels) in a frequency hopping system having a standard hopping sequence that uses a predetermined number of RF channels, the system including a plurality of units including a master unit and at least one or more slave units, comprising;

- a) determining, by one of the units, if any of the RF channels is being interfered (see col.5, lines 9-12);
- b) sending a message by the unit to other units to inform that the interfered channel is to be replaced with another channel (see col. 21-25).

Claim 8.

Koivu discloses the units communicating using “the reduced hopping sequence” after step (b). See col. 5, lines 25-28.

Claim 10.

Koivu discloses a base station communicating with a plurality of remote transceivers.

Thus, the base station will be communicating with a transceiver using “the reduced hopping sequence” when some of the RF channels are found interfered with while communicating with another transceiver using the standard sequence when none of the RF channels are interfered with.

Claims 12 and 13.

Koivu discloses that the base station determines interfered channels and inform the remote transceiver (25), where master/slave relationship between the two transceivers is arbitrary.

Claim 14.

Since channels to be avoided are communicated to the remote unit and the frequency hopping channels constitute the bandwidth, this message is “information on the bandwidth of the RF channels.”

Claim Rejections - 35 USC § 103

6. Claim 2-5, 19, 23, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koivu (US 5,737,359).

Koivu discloses all the subject matter claimed except for specific signal characteristics used for determining interference such as the packet error rate, receiving signal strength indicator, $E_b/(N_0 + I_0)$ and CRC. Koivu teaches a bit error rate, i.e., BER, which is a most common signal quality indicator. Because the packet error rate, receiving signal strength indicator, $E_b/(N_0 + I_0)$ and CRC are all well known alternatives to BER and thus would have

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been obvious to one skilled in the art at the time of the invention since any of them could be used as measure to determine interference and the disclosure failed to disclose criticality of using these known quality measures as opposed to using BER.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haartsen (previously cited) in view of Koivu (US 5,737,359).

Haartsen discloses a Bluetooth frequency hopping system, i.e., a Bluetooth system, including a master and a plurality of slave units, see Fig.4A. The Haartsen system is different from the claimed invention in that the claimed invention further requires one unit to determine whether any of the frequency hopping channels are interfered with and to send message to other units such that one of the RF channels in the hopping sequence is replaced with a previous one.

Koivu teaches an adaptive frequency hopping technique where interfered-with channels are replaced with another channels or eliminated for the purpose of maintaining signal quality. See col. 5, lines 9-31.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to determine interfered channels in the frequency hopping sequence in the frequency hopping system of Haartsen and use “a reduced hopping sequence” by replacing or dropping the interfered channels to improve communication as taught by Koivu.

8. Claims 11, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koivu (US 5,737,359) in view of Sydon (US 6,480,721).

Claims 11 and 26.

Koivu discloses all the subject matter claimed as explained above but grouping the RF channels in the standard hopping frequency into a plurality of groups and informing the other transceiver unit of which of the groups to use in forming the reduced hopping sequence. Sydon teaches dividing the RF channels in the standard hopping frequency into a plurality of subsets and replacing a degraded subset with a previously unused subset to prevent collisions that could occur when two or more base stations used the same channel at the same time. Thus, it would have been obvious to one skilled in the art at the time the invention was made to group the RF channels in the standard hopping frequency into a plurality of subsets and informing the other transceiver unit of which of the groups to use for the purpose of avoiding collisions that could occur when two or more base stations used the same channel at the same time.

Claims 27-29.

Koivu teaches a bit error rate , i.e., BER, which is a most common signal quality indicator. Because the packet error rate, receiving signal strength indicator, $E_b/(N_0 + I_0)$ and CRC are all well known alternatives to BER and thus would have been obvious to one skilled in the art at the time of the invention since any of them could be used as measure to determine interference and the disclosure failed to disclose criticality of using these known quality measures as opposed to using BER.

9. Claim 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haartsen (previously cited) in view of Koivu (US 5,737,359) and Sydon (US 6,480,721).

Claims 16, 18 and 20.

Haartsen discloses a Bluetooth frequency hopping system, i.e., a Bluetooth system, including a master and a plurality of slave units, see Fig.4A. The Haartsen system is different from the claimed invention in that the claimed invention further requires one unit to determine whether any of the frequency hopping channels are interfered with and to send message to other units such that one of the RF channels in the hopping sequence is replaced with a previous one.

Koivu teaches an adaptive frequency hopping technique where interfered-with channels are replaced with another channels or eliminated for the purpose of maintaining signal quality. See col. 5, lines 9-31.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to determine interfered channels in the frequency hopping sequence in the frequency hopping system of Haartsen and use “a reduced hopping sequence” by replacing or dropping the interfered channels to improve communication as taught by Koivu.

Haartsen in view of Koivu discloses all the subject matter claimed as explained above but grouping the RF channels in the standard hopping frequency into a plurality of groups and informing the other transceiver unit of which of the groups to use in forming the reduced hopping sequence. Sydon teaches dividing the RF channels in the standard hopping frequency into a plurality of subsets and replacing a degraded subset with a previously unused subset to prevent collisions that could occur when two or more base stations used the same channel at the same time. Thus, it would have been obvious to one skilled in the art at the time the invention was made to group the RF channels in the standard hopping frequency into a plurality of subsets and informing the other transceiver unit of which of the groups to use for the purpose of avoiding

collisions that could occur when two or more base stations used the same channel at the same time.

Claim 17.

Koivu discloses a RF quality measurement circuit (24) by measuring BER.

Claim 19.

Koivu teaches a bit error rate , i.e., BER, which is a most common signal quality indicator. Because the packet error rate, receiving signal strength indicator, $E_b/(N_0 + I_0)$ and CRC are all well known alternatives to BER for determining received signal quality and thus would have been obvious to one skilled in the art at the time of the invention since any of them could be used as measure to determine interference and the disclosure failed to disclose criticality of using these known quality measures as opposed to using BER.

Allowable Subject Matter

10. Claims 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Cannon et al (US 6,751,249), Kostic et al (US 6,549,784), Takahashi et al (US 6,275,518), Gillis et al (US 5,323,447) and McMullan, Jr. (US 5,225,902) teach each modifying frequency hopping channels or patterns upon detection of interfered channels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Venderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Y. Kim
KEVIN KIM
PATENT EXAMINER